Blue lenses as a management tool for patients with seizures triggered by photoparoxysmal response

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Abstract: We discuss a patient with low vision who suffers from seizures brought on by photoparoxysmal response and the results of his trial with Zeiss Z1 blue tinted lenses.

I. Case History

- Patient demographics
  - 21 year old, minimally verbal, Caucasian male with cerebral palsy (JN)
- Chief complaint (reported by patient’s mother)
  - Seizures triggered by “rapid refocus” i.e. looking out the window on the bus, flashing lights (photosensitive epilepsy)
- Ocular, medical history
  - Low vision secondary to cortical visual impairment
  - Cerebral palsy; cortical visual impairment secondary to left middle cerebral artery stroke before birth
  - Middle cerebral infarct at six months
  - Clotting factor deficiency
- Medications
  - Valium - seizures
  - Zonisamide - anticonvulsant
- Other salient information
  - Neurologist told patient and his mother that he has migraine response to light stimuli
  - Preventing exposure to flashing lights, especially bright headlights. Has been using clip-ons, but they 'destroy' lenses (lenses are scratched).
o Mother reports patient dislikes his fitovers and does not wear them, tends to cover
his face instead with his hat when many light stimuli are present.
o Currently has photochromic lenses but these lenses do not get dark enough
o Goals of the exam/other information:
  ▪ Mother interested in tints to help prevent migraines indoors
  ▪ Permanent sunglasses for outdoors?
  ▪ Mother interested in glasses for walking around and for reading
  ▪ Big print reading, student of art, enjoys television
  ▪ Ambulates well into room. Right arm is affected by CP.

II. Pertinent findings
  • Clinical
    o Visual Acuity (measured with back-lit Bailey-Lovie Chart)
      ▪ 20/125 OD, 20/63 OS
    o Unable to perform retinoscopy (due to concern for seizures)
    o Difficult refraction (Patient agrees with all lens choices)
    o Refractive error (Mother assists in VA measurements, helps to isolate letters)
      ▪ +4.00 OU
    o Contrast Sensitivity (Berkeley Discs Contrast Test)
      ▪ Moderate loss, 4.5%
    o Low Luminance Contrast Sensitivity
      ▪ 1.05 log, 9%, severe loss

III. Differential diagnosis
  • Photoparoxysmal responses subclassification
    o Type 1: spikes within the occipital rhythm
    o Type 2: parieto-occipital spikes with a biphasic slow wave
    o Type 3: parieto-occipital spikes with a biphasic slow wave and spread to the
      frontal region
    o Type 4: generalized spikes and waves or polyspikes and waves

IV. Diagnosis and discussion
  • Photosensitive epilepsy can pose a serious threat to a patient’s functionality. Patients who
  experience seizures brought on by photoparoxysmal response are sensitive to lights,
repeating patterns, or moving patterns. Some of these episodes are not adequately controlled with medicine.

V. Treatment, management

- Treatment and response to treatment
  - Prescribed Zeiss Z1 blue tinted lenses in a wrap around sunglass for full time wear. Order is in process at the time of writing this outline. Patient to return for follow up after receiving and wearing glasses for a few weeks.
  - Research study in Italy evaluated the suppressive efficacy of a specific tint, Zeiss Z1 blue tinted lenses, in 610 patients with seizures brought on by PPR. Their statistically significant results indicated that 94% of patients in the study had a reduction or elimination of seizure episodes as a result of wearing this commercially available blue tint.

- Bibliography

VI. Conclusion

- Zeiss Z1 blue tinted lenses may provide an option for patients who suffer from seizures brought on by repeating patterns or light stimuli. This is a relatively affordable option for patients to use and is readily available to eye-care providers.